

# Two New Species of Cancellariidae (Gastropoda: Neogastropoda) from Brazil

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## ABSTRACT

Two new species of cancellariids are described from shallow waters of the Brazilian Province. Each has a sister species in the Caribbean Province. *Tritonoharpa leali*, n. sp. differs from *T. lanceolata* in having a more inflated and thinner shell, in which the axial costae are more pronounced than the spiral cords. *Cancellaria petuchi* n. sp. differs from *C. reticulata* in having a thick, white callus on the columellar side of aperture, a broad, rounded shoulder, and a proportionally longer aperture and larger protoconch than *C. reticulata*. *Cancellaria petuchi* lacks strongly cancellated sculpture on the body whorl and the bifid posteriormost columellar fold of *C. reticulata*.

*Key words:* Cancellariidae; *Tritonoharpa*; *Cancellaria*; new species; Brazil

## INTRODUCTION

The molluscan fauna of Brazil has been regarded by most authors (e.g., Abbott, 1974; Rios, 1970, 1975, 1985) as comprising the southernmost component of the Caribbean Province. Several workers, among them Ekman (1953), Work (1969) and Rios (1970), had commented on an endemic component of the Brazilian molluscan fauna, while others (Briggs, 1974; Coelho & Koenig, 1972; Coelho & Ramos, 1972) had suggested the existence of a Brazilian Subprovince or Province. More recently, Petuch (1988:166) delimited the region extending from the mouth of the Amazon River southward into the Mar de Plata as the Brazilian Province and listed a number of endemic molluscan indicator species. Other authors (e.g., Vokes, 1990) have begun to distinguish between Brazilian species and their often closely related Caribbean counterparts.

The cancellariid fauna of Brazil is poorly known. Lange de Morretes (1949, 1953) did not include any member of this family in his catalogs of Brazilian mollusks, while Abbott (1974:246) and Rios (1970:111, 1975:127, 1985:126) listed only *Cancellaria reticulata* Linné, 1767 and *Tritonoharpa lanceolata* (Menke, 1828) (as *Colubraria lanceolata*) as occurring in the Brazilian fauna. Verhecken (1991) underscored the paucity of records for this

family in the fauna of the subequatorial western Atlantic, and described two bathyal cancellariids from off south-eastern Brazil.

A large series of specimens of an undescribed *Cancellaria* as well as two specimens of a new species of *Tritonoharpa* were recently made available to us from commercial and institutional sources. We take pleasure in naming these new species after the persons who first brought them to our attention.

## ABBREVIATIONS USED IN TEXT

KBIN—Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels

MNHN—Muséum national d'Histoire naturelle, Paris

MORG—Museu Oceanográfico da Fundação Universidade do Rio Grande, Rio Grande, Brazil.

UFJF—Universidade Federal de Juiz de Fora, Minas Geraes

USNM—National Museum of Natural History, Smithsonian Institution, Washington, DC

## SYSTEMATICS

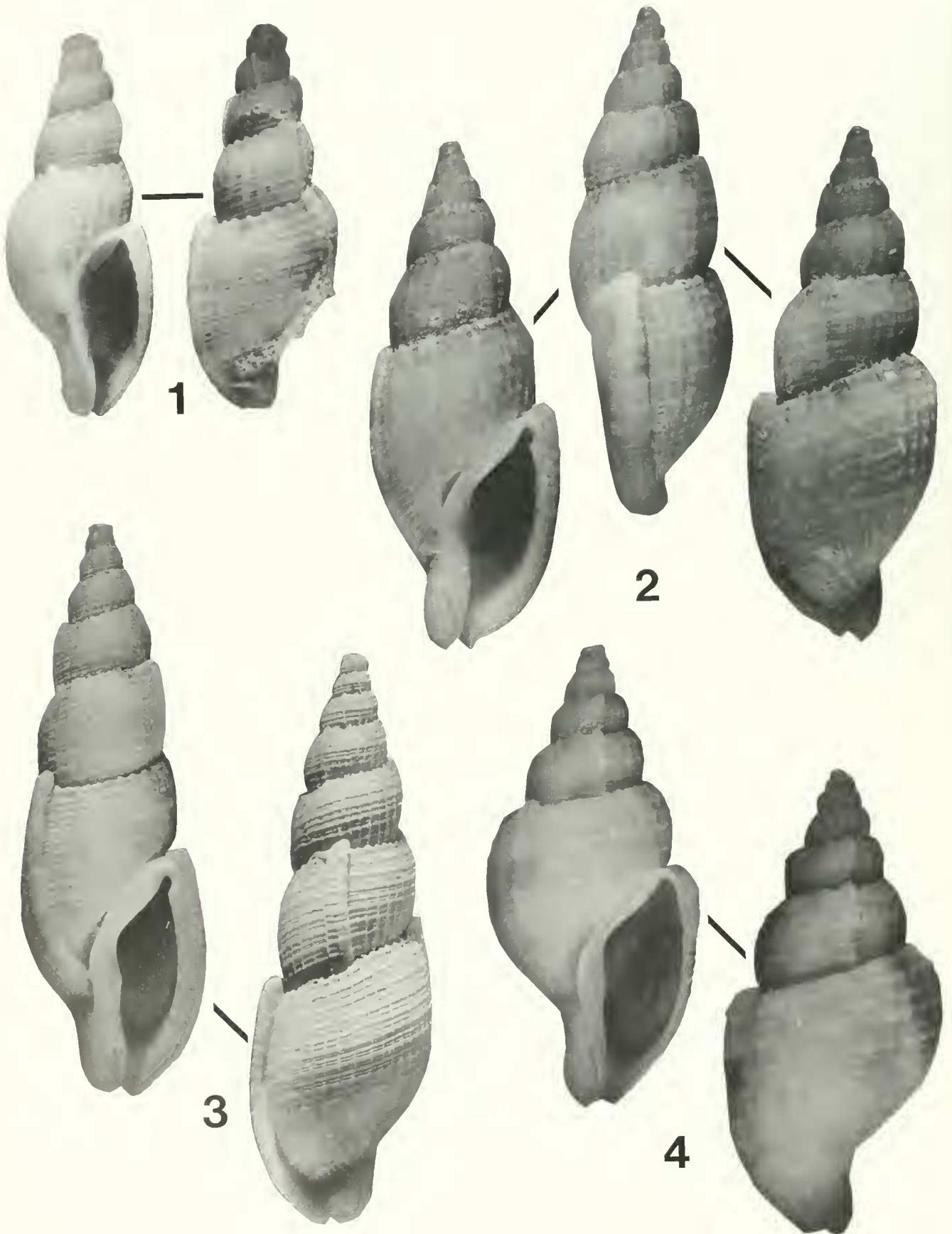
Family Cancellariidae Forbes & Hanley, 1851

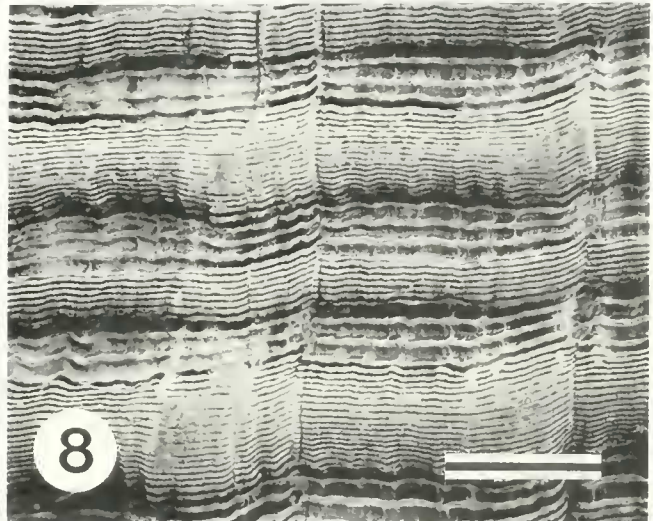
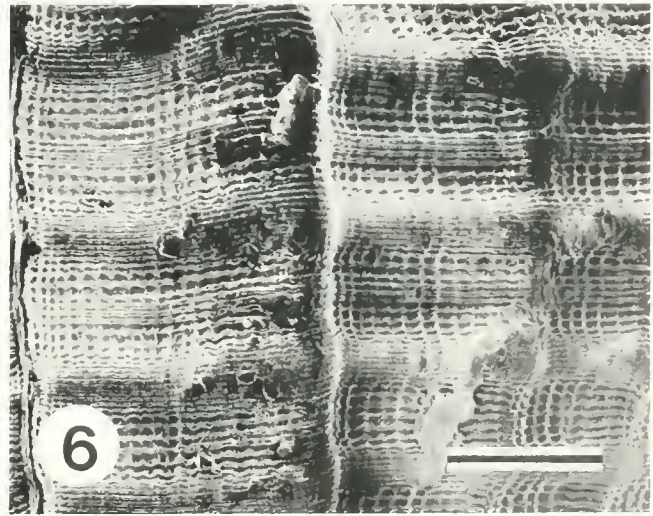
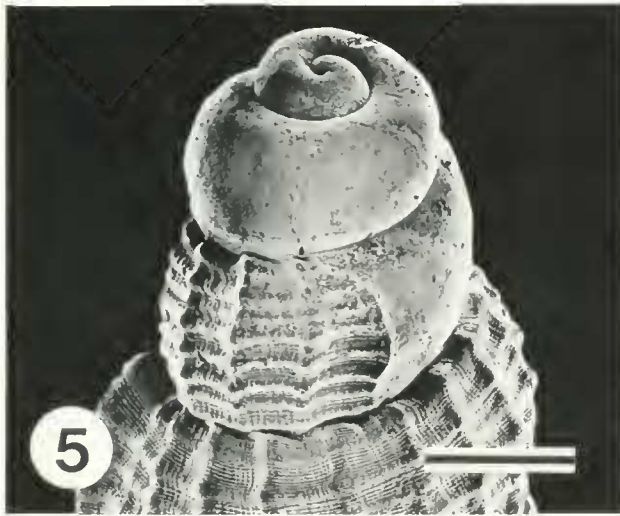
Subfamily Plesiotritoninae Beu & Maxwell, 1987

Genus *Tritonoharpa* Dall, 1908

Beu and Maxwell (1987) reviewed the genus *Tritonoharpa*, enumerating the following diagnostic characters: elongate-ovate to biconic shells with spire half or more the shell length; weakly to moderately convex teleoconch whorls; prominent non-collabral varices on early as well as later whorls; well developed columellar collar; columellar plait either single and weak or absent; radula absent.

Recent western Atlantic species of *Tritonoharpa* include the Carolinian and Caribbean *T. lanceolata* (Menke, 1828); *T. cubapatriae* (Sarasua, 1975), based on a unique holotype from off Havana, Cuba; *T. bayeri* (Petuch, 1987) from the Caribbean coast of Colombia;





Figures 5–6. *Tritonoharpa leali* new species. 5. Protoconch of holotype, scale bar = 500  $\mu$ m. 6. Surface sculpture of holotype, scale bar = 200  $\mu$ m. Figures 7–8. *Tritonoharpa lanceolata* (Menke, 1828). 7. Protoconch of specimen in figure 3, scale bar = 500  $\mu$ m. 8. Surface sculpture of specimen in figure 3, scale bar = 200  $\mu$ m.

and the new species described below. *Minibraria monroei* (McGinty, 1962) has been referred to the Muricidae on the basis of the morphology of its varices and protoconch (Beu & Maxwell, 1987:56).

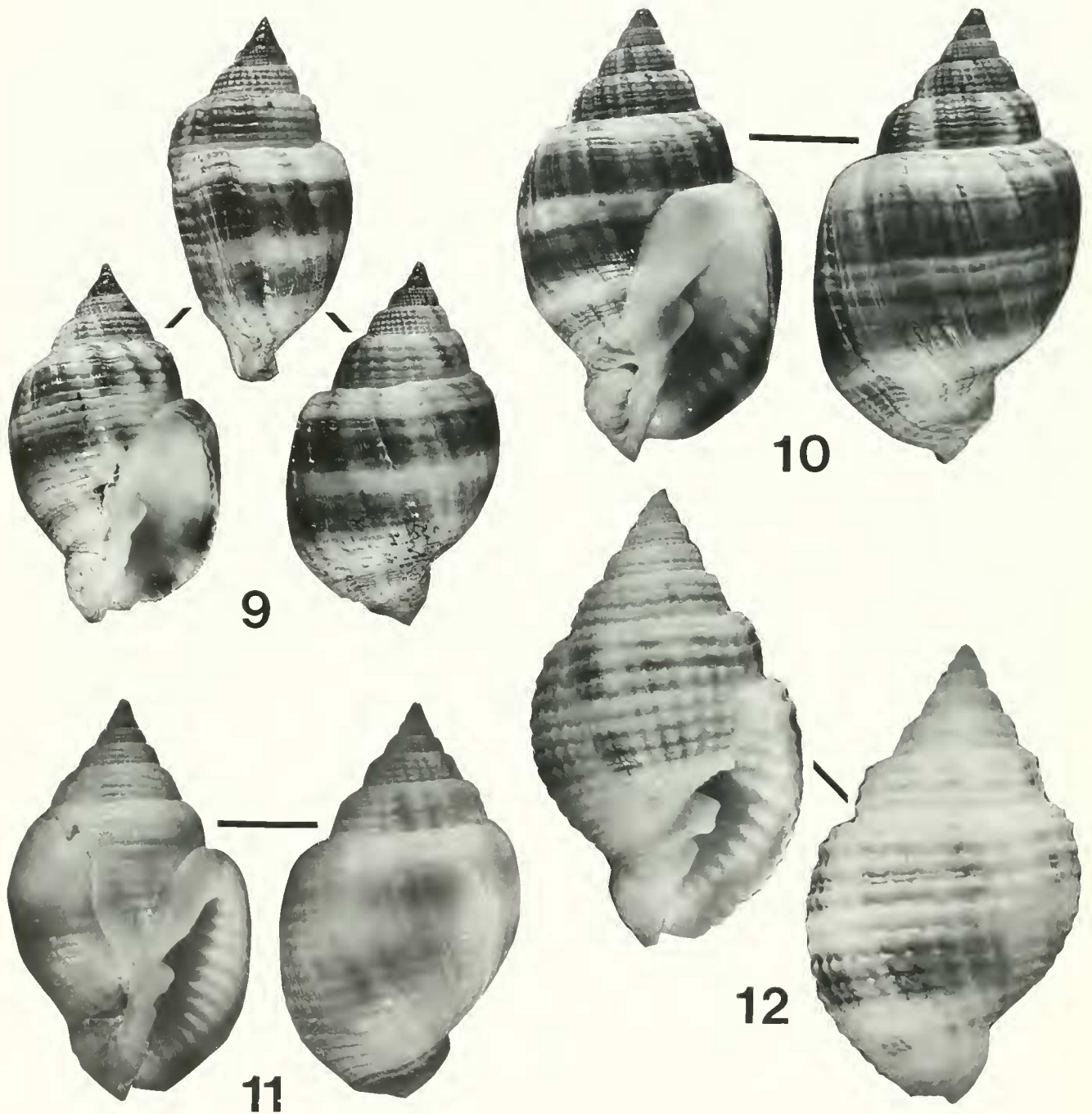
*Tritonoharpa leali* new species  
(figures 1, 2, 5, 6)

**Description:** Shell (figures 1–2) to 18.4 mm, thin, tall, narrow. Spire high (spire angle 31–35°), stepped, comprising about  $\frac{3}{5}$  of total shell length. Protoconch paucis-

piral, of  $2\frac{1}{4}$  inflated, weakly shouldered whorls (figure 5). First  $1\frac{1}{2}$  whorls nearly planispiral, descending rapidly thereafter. Protoconch coaxial with, or deviated from, teleoconch axis by up to 5°. Transition to teleoconch abrupt, marked by flared protoconch lip and onset of pronounced spiral sculpture. Teleoconch with up to  $5\frac{2}{3}$  slightly inflated, weakly shouldered whorls. Suture deeply impressed, obscured by axial costae of succeeding whorl. Spiral sculpture of strong, low, equally spaced cords, 20–26 on body whorl, 12–15 on penultimate whorl; cords, 0–3, weak or absent on siphonal canal. Axial sculp-

Figures 1–2. *Tritonoharpa leali* new species. 1. Holotype, MORG 28659, Davis Bank, southeastern Brazil, 20°40'S, 34°41'W, in 60 m, Marion-Dufresne MD55 sta. DC40, 7.5 $\times$ . 2. Paratype 1, USNM 860521, off Itaparica Island, Bahia, Brazil, trawled in 20 m, 5.0 $\times$ . Figure 3. *Tritonoharpa lanceolata* (Menke, 1828). USNM 795073. Off St. Thomas, Virgin Islands, 5.0 $\times$ . Figure 4. *Tritonoharpa bayeri* (Petuch, 1957), Holotype, USNM 859853, Cabo La Vela, Goajira Peninsula, Colombia, in 35 m, 5.0 $\times$ .





Figures 9–10. *Cancellaria petuchi* new species. 9. Holotype, MORC 28660, 2.0×. 10. Paratype 4, USNM 859409, Off Vitória, Espírito Santo, Brazil, trawled on sand bottom in 40 m, 2.0×. Figure 11. *Cancellaria adelae* Pilsbry, 1940, USNM 508663, Little Duck Key, Florida, 1.5×. Figure 12. *Cancellaria reticulata* (Linné, 1767), USNM 811479, 30 mi. ENE of Eau Gallie, Florida [28°17'N, 80°01'W], in 34–41 fms (62–75 m), R/V Silver Bay Sta. 2010, 2.0×.

ture of pronounced varices and narrow, opisthocone costae. Varices high, non-collabral, narrow, rounded abaperturally, undercut adaperturally, 180–200° apart on early whorls, up to 238° apart on later whorls. Costae (7–22 between varices, 15–33 per whorl) offset from varices by 5–10°, producing cancellate sculpture at their intersection with spiral cords. Aperture narrow, elliptical, with

well defined posterior notch. Inner lip smooth, with columellar collar reflected over, but not adherent to, fasciole and pseudumbilicus. Outer lip with up to 8 pairs of denticles confined to flared region beyond varix. Siphonal canal short, dorsally reflected, partially covered abaxially. Base color khaki to yellowish tan, with darker brown maculations anterior to suture and along varices.

**Table 1.** Shell measurements of *Cancellaria reticulata* and *C. petuchi*. All measurements in mm (N = 10). For *C. reticulata*, the 10 specimens were selected from throughout the species range, while for *C. petuchi*, data is based on specimens from a single lot (paratypes 4–13).

	<i>C. reticulata</i>		<i>C. petuchi</i>	
	$\bar{x}$	$\sigma$	$\bar{x}$	$\sigma$
Shell length (SL)	39.67	6.21	33.68	1.98
Aperture length (AL)	25.64	3.99	23.64	1.33
(AL/SL)	0.65	0.03	0.70	0.01
No. whorls, teleoconch	6.34	1.76	5.51	0.20
No. whorls, protoconch	2.67	0.10	2.74	0.06
Diameter, protoconch	1.23	0.06	1.60	0.05
Diameter no. whorls, protoconch	0.46	0.02	0.59	0.02

**Type locality:** Davis Bank, southeastern Brazil, 20°40'S, 34°41'W, in 60 m, Marion-Dufresne MD55 sta. DC40. May 1987.

**Material examined:** Holotype, MORG 28659, 9.22 mm; Paratype 1, USNM 860521, off Itaparica Island, Bahia, Brazil, trawled in 20 m, 18.44 mm.

**Distribution:** This species is known from two records, both off the state of Bahia, Brazil, in depths of from 20 to 60 m.

**Etymology:** This species honors Dr. José H. Leal, in recognition of his contributions to the study of Brazilian mollusks.

**Comparative remarks:** *Tritonoharpa leali* most closely resembles *T. lanceolata*, from which it differs in having a somewhat more inflated and thinner shell, in which the axial costae are more pronounced than the spiral cords (compare figures 5 and 7). *Tritonoharpa bayeri* is even broader and thinner than *T. leali*, and is the only western Atlantic *Tritonoharpa* in which the aperture length exceeds half the shell length.

Subfamily Cancellariinae Forbes & Hanley, 1851

Genus *Cancellaria* Lamarck, 1799

The genus *Cancellaria* is characterized by the presence of a thick, ovate to biconic shell with strongly cancellate sculpture, prosocline outer lip, a weak stromboid notch, short but distinct siphonal canal, prominent siphonal fasciole, lirate outer lip, and columella with two to three strong folds, the posteriormost strongest and usually bifid.

Jung and Petit (1990:100) reduce *Pyruclia* Olsson, 1932 to subgeneric status within *Cancellaria*, and distinguish it from the nominotypical subgenus on the basis of its pyriform shape with reduced or absent sculpture on body whorl and a columella with two strong, non-bifid folds.

*Cancellaria petuchi* new species  
(figures 9, 10, 14–16)

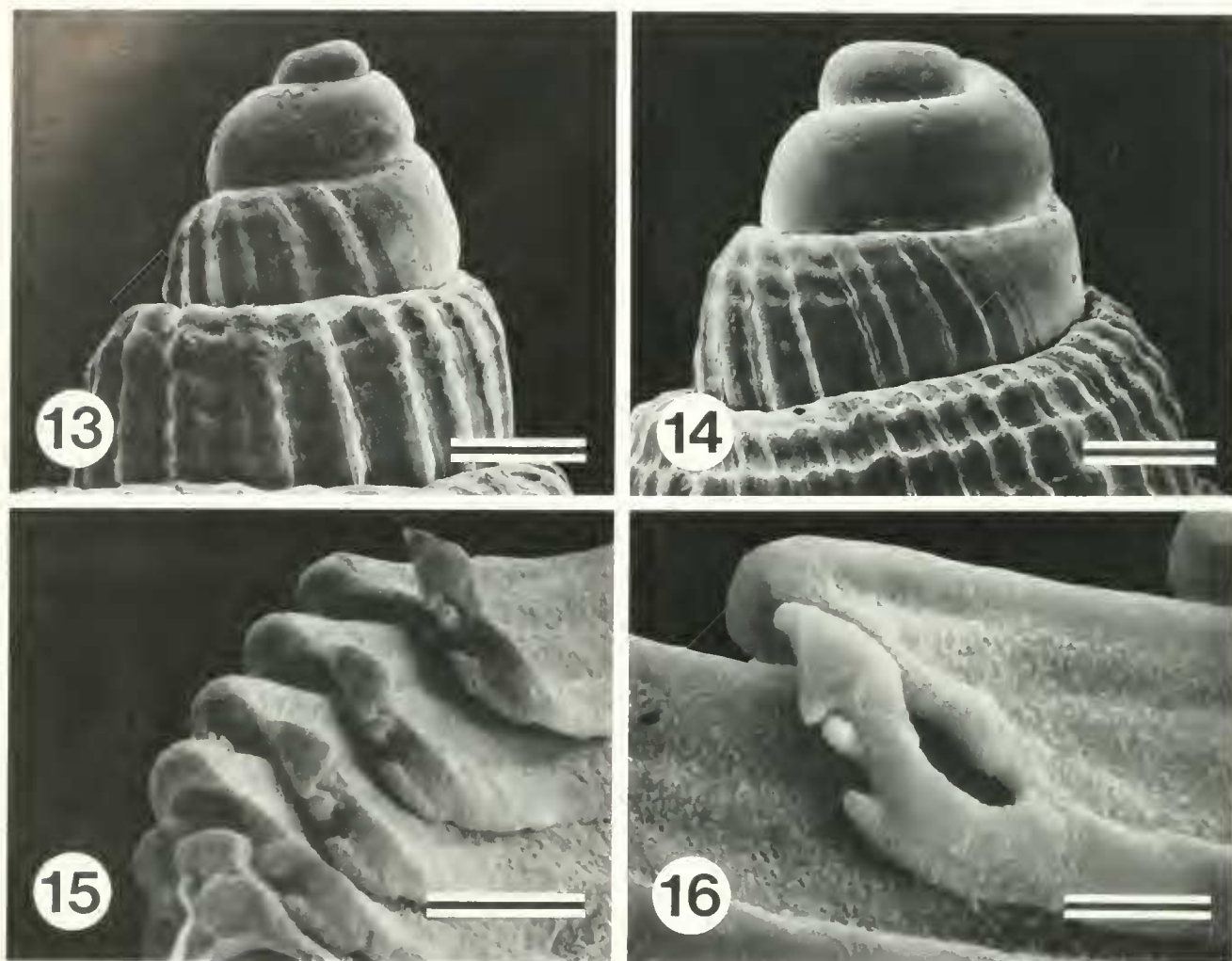
**Description:** Shell (figures 9–10) to 37 mm, heavy biconic, pseudoumbilicate. Spire high (spire angle 62–70°), conical, comprising about 3/4 of total shell length. Protoconch paucispiral, of 2½ low, inflated, glassy whorls

(figure 14). Protoconch may be co-axial with, or deviated from teleoconch axis by up to 15°. Teleoconch with up to 6½ strongly convex whorls. Suture deeply impressed. Spiral sculpture of 18–24 major cords on body whorl, 6–10 on siphonal canal, 6–8 on penultimate whorl. Axial sculpture of 20–38 prosocline ribs that form strongly cancellate sculpture at intersection with spiral cords, especially on first four teleoconch whorls. Thereafter, axial ribs become broader, less pronounced, may disappear entirely, especially below the shoulder. Aperture large, broad, hemi-elliptical, deflected from coiling axis by 12–18°. Outer lip with shallow indentation posterior to junction with siphonal canal and 10–12 strong lirae, slightly recessed, either diminishing ¼ whorl into aperture, or more usually, disappearing and reappearing ¼ whorl within the aperture. Inner lip with 2 columellar and 1 siphonal folds. Posteriormost columellar fold largest, overlying siphonal fasciole. All folds with single, sharp keel. Siphonal canal short, deflected dorsally and abaxially. Base color white to light tan, with spiral bands of base color, especially on early whorls. Some specimens pure white. Aperture with white overglaze forming thick callus along columella.

**Type locality:** N.E. of Vitória, Espírito Santo, Brazil, 19°35'S, 39°42'W, in 15 m. South Eastern Brazil N.O. Marion-Dufresne MD55 sta. DC87, May 1987.

**Material examined:** Holotype, MORG 28660, 28.16 mm; Paratypes 1–3, MNHN, N.E. of Vitória, Espírito Santo, Brazil, 19°34'S, 39°34'W, in 34 m, N.O. Marion-Dufresne MD55 sta. CB90, May 1987, 32.52 mm, 11.01 mm, 8.06 mm; Paratypes 4–23, USNM 859409, Paratypes 24–36, Petit collection, Paratypes 37–38, KBIN, Paratypes 39–52, Verhecken collection, all from Off Vitória, Espírito Santo, Brazil, trawled on sand bottom in 40 m, 29.26–36.56 mm. Paratypes 53–55, Petit collection, Mangue da Olaria, Guarapari, Espírito Santo, Brazil, in sand, minus tide. Paratypes 56–57, UFJF, Niterói, Rio de Janeiro, Brazil. Paratype 58, MORG 19472, off Salinópolis, Pará, Brazil, in 36 m. Paratypes 59–62, MORG 23307, Coroa Vermelha, Abrolhos Islands, Bahia, Brazil, in 1 m.

**Distribution:** This species ranges from off Salinópolis, Pará, to off Niterói, Rio de Janeiro, Brazil. It occurs from intertidal depths to 40 m.



**Figure 13.** *Cancellaria reticulata* (Linné, 1767). Protoconch, scale bar = 500  $\mu\text{m}$ . **Figure 14–16.** *Cancellaria petuchi* new species. **14.** Protoconch of paratype, same data as fig. 10. Scale bar = 500  $\mu\text{m}$ . **15.** Frontal and **16.** Lateral view of distal ends of radicular teeth. Scale bars = 5.0  $\mu\text{m}$  (fig. 15), 3.0  $\mu\text{m}$  (fig. 16).

**Etymology:** This species honors Dr. Edward J. Petuch, as a tribute to his contributions to our knowledge of the molluscan fauna of Brazil, and the Neogene zoogeography of the western Atlantic faunas.

**Comparative remarks:** *Cancellaria petuchi* differs from its geographically proximate congener *C. reticulata* in having reduced or absent cancellate sculpture on the body whorl and lacking a bifid posteriormost columellar fold. *Cancellaria petuchi* has a thick, white callus on the columellar side of the aperture and a broad, rounded shoulder, features lacking in *C. reticulata*. *Cancellaria petuchi* also has a proportionally longer aperture and larger protoconch than *C. reticulata* (table 1). Radular morphology of *Cancellaria petuchi* (figures 15, 16) agrees in all essential features with that of *C. reticulata* (Harsawych & Petit, 1982: figures 14, 15—these figures show the ventral surfaces of the distal tips of two radular teeth).

Of the western Atlantic species of *Cancellaria*, *C. petuchi* most strongly resembles *C. adalae* Pilsbry, 1940

(figure 11), a species endemic to the Florida Keys, with which it shares its predominantly smooth body whorl sculpture and thick parietal overglaze. *Cancellaria adalae* however, has a strongly bifid columellar fold, and indeed, may have an additional fold along the posterior portion of columella.

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## LITERATURE CITED

- Abbott, R. T. 1974. American seashells, second edition. Van Nostrand Reinhold, Co., New York. 663 p.
- Beu, A. G. and P. A. Maxwell. 1987. A revision of fossil and living Gastropods related to *Plesiotriton* Fischer, 1884 (Family Cancellariidae, Subfamily Plesiotritoninae n. subfam.) with an appendix: Genera of Buccinidae Pisaninae related to *Colubraria* Schumacher, 1817. New Zealand Geological Survey Paleontological Bulletin 54:1-140, pls. 1-30.
- Briggs, J. C. 1974. Marine Zoogeography. McGraw-Hill, New York. 475 p.
- Coelho, P. A. and M. L. Koenig. 1972. A distribuição dos crustáceos pertencentes às ordens Stomatopoda, Tanaidacea e Isopoda no Norte e Nordeste do Brasil. Trabalhos Oceanográficos da Universidade Federal de Pernambuco 13:245-260.
- Coelho, P. A. and M. A. Ramos. 1972. A constituição e distribuição da fauna de decápodos crustáceos do litoral leste da América do Sul entre as latitudes de 5°N e 39°S. Trabalhos Oceanográficos da Universidade Federal de Pernambuco 13:133-236.
- Ekman, S. 1953. Zoogeography of the Sea. Sidgwick and Jackson, London xiv + 417 p.
- Harasewych, M. G. and R. E. Petit. 1982. Notes on the morphology of *Cancellaria reticulata* (Gastropoda: Cancellariidae). The Nautilus 96(3):104-113.
- Jung, P. and R. E. Petit. 1990. Neogene Paleontology in the northern Dominican Republic. 10 The family Cancellariidae (Mollusca: Gastropoda). Bulletin of American Paleontology 98(334):87-144.
- Lange de Morretes, F. 1949. Ensaio de catálogo dos moluscos do Brasil. Arquivos do Museu Paranaense 7(1):5-216.
- Lange de Morretes, F. 1953. Adenda e corrigenda an ensaio de catálogo dos moluscos do Brasil. Arquivos do Museu Paranaense 10(1):37-76.
- McGinty, T. L. 1962. Caribbean marine shells. The Nautilus 76(2):39-44, pl.3.
- Petuch, E. J. 1987. New Caribbean Molluscan Faunas. The Coastal Education & Research Foundation, Charlottesville. 1-154, A1-A4.
- Petuch, E. J. 1988. Neogene history of tropical American mollusks. The Coastal Education & Research Foundation, Charlottesville. 217 p.
- Pilsbry, H. A. 1940. A new race of *Cancellaria* from Florida. The Nautilus 54(2):54.
- Rios, E. C. 1970. Coastal Brazilian Seashells. Museu Oceanográfico, Rio Grande. 255 p., 60 pls.
- Rios, E. C. 1975. Brazilian Marine Mollusks Iconography. Museu Oceanográfico, Rio Grande. 331 p., 91 pls.
- Rios, E. C. 1985. Seashells of Brazil. Museu Oceanográfico, Rio Grande. 328 p., 102 pls.
- Verhecken, A. 1991. Description of two new species of bathyal Cancellariidae (Mollusca, Gastropoda) from off Brazil. Bulletin Museum national d'Histoire naturelle, Paris. Series 4, 12, Section A (3-4):547-553.
- Vokes, E. H. 1990. Two new species of *Chicoreus* subgenus *Siratus* (Gastropoda: Muricidae) from northeastern Brazil. The Nautilus 103(4):124-130.
- Work, R. C. 1969. Systematics, ecology, and distribution of the mollusks of Los Roques, Venezuela. Bulletin of Marine Science 19(3):614-711.